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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/786,283	05/10/2001	Andreas Ritschen	10191/1736	8294

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EXAMINER	
JACKSON, BLANE J	

ART UNIT	PAPER NUMBER
2685	8

DATE MAILED: 05/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/786,283	RITSCHEN ET AL.	
	Examiner	Art Unit	
	Blane J Jackson	2685	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *24 March 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *6-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *6-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. The applicant requests support for the assertion that the GDC reference discloses an oscillation frequency being set above a received frequency in one band by a defined amount and set below a received frequency in another band by the same amount. GDC teaches a multi-band system with a PLL system that selects the frequency band through a choice of one of a plurality (two) oscillators where the selected oscillator is tuned to be mixed with the incoming signal (the sum or difference product) to yield a selected defined IF output frequency. The selected IF output would be the same for either band for compatibility with the bandwidth of the received signal and subsequent demodulation equipment, typically an IF of 10.7 MHz for a FM receiver (page 3, lines 14-64). The reference Ahlemeyer was introduced to show a single oscillator (VCO) that can be stepped in frequency to another frequency band through a change to the inductor in the resonant tank while the capacitor, the varactor, is voltage controlled in the PLL loop to tune the VCO within the selected frequency band (column 2, line 55 to column 3, line 25). The references are analogous in that both teach a multi band receiver utilizing a PLL circuit with VCO tuning but use different means for switching in the separate frequency bands.

The Hongu reference was included in claim 6 only to clearly show "a receiving antenna connected to the first variably tunable tuning stage and to the second variably tunable tuning stage" without the front end stage select switch shown in GDC (GDC:

figure 1, antenna (10), electronic band switch (34)). The option to use the front-end stage switch is the subject matter of claim 8. The Hongu reference is not strictly required in view of the language of claim 6.

In view of these comments, the rejection has been repeated below but edited for content. Also, new claims 11 and 12 are addressed.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 6-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over General Dynamics Corporation (hereafter "GDC", Patent Specification 1,190,459) with a view to Ahlemeyer et al. (U.S. Patent 4,888,815) and Hongu et al. (U.S. Patent 4,115,737).

As to claim 6, GDC discloses a radio receiver device (figure 1, page 6, lines 37-62), page 3, lines 26-34) including:

At least a first variably tunable tuning stage for a first receiving range and a second variably tunable tuning stage for a second receiving range, the first variably tunable tuning stage and the second variable tunable tuning stage being capable of being switched separately (figure 1, stage (20, 24 and 22) and second stage (28, 32, 18), page 2, line 52 to line 94),

A changeover switch for providing an optional connection of one of the first variably tunable tuning stage and the second variably tuning stage with the frequency converter stage (physical switch (36) and band switching signal, page 2, lines 104-129),

A changeover device (band switches (34) and (36), page 2, lines 95-104),

One of two selected mixing oscillators for converting a received high frequency signal into a defined intermediate frequency where in accordance with an operation of the changeover device, a selected oscillator is changed over for the second oscillator in a tuning range to one of the first variably tunable tuning stage and the second variably tunable tuning stage in such a way that for the first receiving range of the first variably tunable tuning stage an oscillation frequency of the first variably tunable tuning stage is capable of being set above a frequency to be received by a quantity of the defined intermediate frequency and that for the second receiving range of the second variably tunable tuning unit an oscillation frequency of the second variably tunable tuning stage is capable of being set below the frequency to be received by the quantity of the defined intermediate frequency (changeover switch selected VFO band A (54) and VFO band B (56) would be designed to mix for a fixed IF output, such as the difference product, in accordance with the input band of frequencies of band A and B, page 5, line 117 to page 6, line 36).

GDC does not teach a single mixing oscillator for converting a high frequency first and second band into a defined IF.

Ahlemeyer teaches a radio receiver with a frequency synthesizer with coil switching circuits in the resonant tank of the variable frequency oscillator (VFO) to

provide one of two selected frequency bands to the multi band RF and mixer circuitry (figure 1, (22), column 2, line 48 to column 3, line 1. Note the additional frequency doubler or tripler for the large high VHF and UHF band separations is not to be confused with the ability of the VCO itself to band shift). Since GDC teaches a receiver with a single mixer circuit providing multi band performance it would have been obvious to one of ordinary skill in the art at the time of the invention to replace the switched two VCO system of GDC with the single band switched VCO configuration of Ahlemeyer to perform the same two band function with a reduction in circuit parts and circuit board space.

GDC teaches a receiving antenna switched between the first variably tunable tuning stage and the second variably tunable tuning stage (figure 1, antenna (10), page 2, lines 28-33) but does not teach a receiving antenna connected to the first and second variably tunable tuning stages.

Hongu teaches a receiving antenna is connected to a first and second tuned stages of a multi band tuner, but with switched band selection prior to the first stage (figure 1, column 1, lines 45-60). It would have been obvious to one of ordinary skill in the art at the time of the invention to alternatively configure the antenna input circuit of GDC modified with the method of Hongu to simplify the design without loss in performance.

As to claim 7, Ahlemeyer of GDC modified teaches the resonant tank in the VCO of a PLL includes a physical means to change the inductive (coil) value to provide for a

step change in frequency in accordance with band selection and an electronic control of the capacitive varactor for in-band frequency changes. Ahlemeyer specifically teaches the primary tuning coil and a second coil is switched into a parallel connection for operation of the VCO in the higher frequency band (column 2, lines 55 to column 3, line 4). Even though GDC modified does not teach a specific coil configuration where the inductive value is selectively switched at a tap point, it would have been obvious to one of ordinary skill in the art at the time of the invention to alternatively configure the resonant tank circuit of GDC with any coil switched configuration due to design considerations to effect a step frequency change in the output of the VCO in a PLL circuit.

As to claim 8, GDC of GDC modified teaches a radio receiver comprising a switch where the receiving antenna is capable of being switched effectively respectively via the inherent coupling capacitor and the switch only for the one of the first variable tunable tuning stage and the second variably tunable tuning stage connected with the frequency converter stage via the changeover device (figure 1, (34) where the band switch is electronic and coupling capacitors would necessarily be included to block VDC circuit currents from the antenna as well as for other well known purposes such as high pass filtering, page 2, lines 95-100).

As to claim 9, GDC of GDC modified teaches a radio receiver where the first variably tunable tuning stage includes a first tunable tuning circuit (20), a first amplifier

stage (24) and a second tunable tuning circuit (22) and the second variably tunable tuning circuit (second frequency band) includes a third tunable tuning circuit (28), a second amplifier stage (32) and a fourth tunable tuning circuit (30) (figure 1, page 2, line 52 to page 3, line 94).

As to claim 10, GDC of GDC modified teaches a radio receiver where the frequency converter stage includes:

a mixing stage (figure 1, mixer (44) and LO circuits),

an oscillator amplifier stage (62),

an isolating amplifier (60), and,

a PLL stage (PLL (46), page 3, lines 35-67).

GDC does not teach a PLL with a divider capable of being programmed via a data bus.

Ahlemeyer teaches a microprocessor based PLL that includes internal registers into which data is loaded for the purpose of programming the synthesizer's programmable divider (column 3, lines 4-7). Ahlemeyer specifically discloses a programmable ROM for storing a frequency matrix including the band frequency allocations organized by state to coordinate PLL control with frequencies (column 4, lines 12-44). It would have been obvious to one of ordinary skill at the time of the invention to update the system of GDC with the micro processor based PLL circuits of Ahlemeyer to changeably program the receive band frequencies and band switch control.

As to claim 11, GDC teaches the radio receiver according to claim 6 further comprising at least one further variably tunable tuning stage for a further receiving range, the at least one further variably tunable tuning stage being capable of being switched separately from the first variably tunable tuning stage and the second variably tuning stage (page 2, lines 52-62).

As to claim 12, GDC teaches the radio receiver according to claim 6 wherein the defined intermediate frequency is about 10.7 MHz (the received signal is translated in frequency to the desired intermediate frequency for AM or FM circuits where 10.7 MHz is a common industry standard for bandwidth considerations of the FM signal, page 3, lines 14-34).

Conclusion

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Blane J Jackson whose telephone number is (703) 305-5291. The examiner can normally be reached on Monday through Friday, 8:00 AM-5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban can be reached on (703) 305-4385. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BJJ

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